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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,280	10/18/2001	Jay R. Walton	PA010454	7801

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Qualcomm Incorporated
Patents Department
5775 Morehouse Drive
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EXAMINER	
NGUYEN, STEVEN H D	
ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 08/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/982,280	WALTON ET AL.	
	Examiner	Art Unit	
	Steven HD Nguyen	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22,35-39 and 53-72* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22,35-39 and 53-72* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 63 objected to because of the following informalities: "capable of" should be replace with another term because the language suggests the processor to perform the function but does not require the processor to perform the functions . Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-2, 6-7, 10-12, 14-21, 35-36 and 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda (USP 6519292) in view of Mirfakhaei (USP 6570912) and Van Nee (USP 6175550).

Regarding claims 1-2, 35-36 and 38-39, Sakoda discloses a transmitter apparatus in a multiple-access OFDM-CDMA system comprising means for coding a data stream in accordance with a particular coding scheme to provide a stream of data symbols (Fig 14, Ref 103); means for spreading the data symbol stream in a frequency domain with one or more spreading codes to provide spread data, wherein the one or more spreading codes are selected from a set of available spreading codes and assigned to the data stream (Fig 14, Ref 104 and 105); means for transforming the spread data in accordance with a particular transformation to provide a stream of OFDM symbols (Fig 14, Ref 107); means for scaling the stream of OFDM symbols in accordance with a particular gain selected for the data stream (Col. 18, lines 33-38 and col. 20, lines 9-61, Fig 14, the control section 102 monitors the transmission rate and generates a power control signal to the transmitter 108 for controling the transmission power of OFDM signal according to the transmission rate such as 32, 64, 96 and 128 Kbps and TX power a, 2a, 3a and 4a wherein transmission rate and transmission power are associated with each other); means for processing the scaled OFDM symbols to provide a modulated signal; and means for transmitting the modulated signal over the communication channel (Fig 14, Ref 108 and 102 used to control transmission power of each of the data stream and processing the OFDM symbols into the modulated signal for transmitting); (See col. 18, lines 15 to col. 20, lines 61). However, Sakoda does not fully disclose a gain is a value that multiplied with OFDM symbol and gain is selected based upon an estimated signal quality. In the same field of endeavor, Mirfakhaei discloses appending a cyclic prefix to each OFDM symbol to provide a corresponding transmission symbol (Fig 3, Ref 354 discloses IDFT for adding a cyclic prefix to each symbol and scaling the symbol with a transmission gain; See col. 11, 23-42). However, Sakoda and Mirfakhaei do not

fully disclose gain is selected based upon an estimated signal quality. In the same field of endeavor, Van Nee discloses a OFDM system for dynamic control transmission rate of the transmitter based on the estimated signal quality and selecting gain based on the feedback (Col. 7, lines 40 to col. 8, lines 18 and col. 9, lines 63 to col. 10, lines 3).

Since, Sakoda suggests a OFDM system for controlling the transmission power used to transmitting the OFDM signal based on the transmission rate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a method of using the feedback signal quality from a receiver for selecting a transmission power as disclosed by Van Nee into a method of using a multiplier for scaling the power of the OFDM symbols as disclosed by Mirfakhaei into Sakoda's system and method. The motivation would have been to match the energy of the output signal of IFFT with a transmission power in order to minimize co-channel interference.

Regarding claim 6, Sakoda discloses the data symbol stream comprises coded bits (Fig 14 discloses data stream symbols comprises the coded bits which is encoded by encoded section 103).

Regarding claim 7, Sakoda discloses the data symbol stream comprises modulation symbols derived based on a particular modulation scheme (Fig 14 discloses data stream symbols comprises the modulated symbols based on encoded scheme "modulation scheme" of encoded section 103).

Regarding claim 10, Sakoda discloses the spreading codes are orthogonal codes (Fig 14, ref 105 is PN orthogonal codes).

Regarding claim 11, Sakoda discloses the spreading codes are pseudo-orthogonal codes (Fig 14, ref 105 is PN orthogonal codes).

Regarding claim 12, Sakoda discloses the transformation is an inverse Fourier transform (Fig 14, Ref 107).

Regarding claims 14-16, Sakoda discloses adjusting the spreading based on a data rate of the data stream by assigning a plurality of spreading codes to the data stream or one or more spreading codes of shorter length to the data stream (Fig 14, the spread code 4, 2, 1, 1 is selected based on the data rate 32, 64, 96 and 128 kbps).

Regarding claim 17, Sakoda discloses the spreading is effectively not performed when the data rate of the data stream reaches a particular threshold data rate (Fig 14, when the data rate equal 192 and 256 kbps, then spreading is not effective any more).

Regarding claim 18, Sakoda discloses scaling transmit power for the data stream based on the data rate (Fig 14, the TX power is associated with data rate).

Regarding claim 19, Sakoda discloses adjusting the gain to adjust transmit power for the data stream (Fig 14, the TX power is associated with data rate).

Regarding claim 20, Sakoda discloses the scaled OFDM symbols are transmitted on a downlink from a base station to a terminal (Fig 14 and 15).

Regarding claim 21, Sakoda discloses the scaled OFDM symbols are transmitted on an uplink from a terminal to a base station (Fig 14 and 15).

4. Claims 3-5, 22 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda, Van Nee and Mirfakharaei as applied to claims 1 and 35 above, and further in view of Jankiraman (IEEE).

Sakoda, Van Nee and Mirfakhaei fail to fully disclose the claimed invention such as covering scaled transmission symbols with a cover code. In the same field of endeavor, Jankiraman discloses covering the scaled OFDM symbols with a cover code has a length that is multiple integer times a length of the OFDM symbol or has a length that is multiple integer times a length of the OFDM symbol or has a length that is multiple integer times a length of the OFDM symbol (Fig 1, PN code generate for cover the OFDM symbol with a cover code).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a cover code to the OFDM symbol as disclosed by Jankiraman into Sakoda, Van Nee and Mirfakharaei. The motivation would have been to increase the throughput of the system for support a multimedia call.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda, Van Nee and Mirfakharaei as applied to claims 1 and 35 above, and further in view of Linz (USP 6219377).

Sakoda, Van Nee and Mirfakhaei fail to fully disclose the claimed invention. In the same field of endeavor, Linz discloses transmitting a pilot along with the scaled OFDM symbols over the communication channel (Fig 3, Ref 322 generates a pilot tone for combining with IFFT output; See col. 4, lines 44 to col. 7, lines 65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a pilot with OFDM signal as disclosed by Linz into the system of Sakoda, Van Nee and Mirfakharaei. The motivation would have been to synchronize between the transmitter and receiver.

6. Claims 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda, Van Nee and Mirfakharaei as applied to claims 1 and 35 above, and further in view of Kalofonos (IEEE).

Sakoda, Van Nee and Mirfakhaei fail to fully disclose the claimed invention. In the same field of endeavor, Kalofonos discloses the spreading codes are Walsh codes which is equal length with the dimension of the transformation (Page 1310, left column wherein the Walsh codes is equal length to IFFT size).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a length of Walsh code equal to the size of the IFFT as disclosed by Kalofonos into Mirfakharaei, Van Nee and Sakano's system. The motivation would have been to match the spreaded data with number of point of IFFT.

7. Claims 53-55, 57-65 and 67-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda (USP 6519292) in view of Van Nee (USP 6175550).

Regarding claims 53-55 and 63-65, Sakoda disclose a circuit for processing information for transmission over a wireless communication channel comprising a memory (Fig 14, Ref 101); and a processor (Fig 14, Ref 102-108) coupled with memory, the processor capable of providing a stream of data symbols (Fig 14, Ref 103), applying one or more spreading codes to the stream of data symbols to provide spread data (Fig 14, Ref 104-105) and generate a stream of OFDM symbols from the spread data (Fig 14, Ref 107), the processor further capable of applying a gain to the stream of OFDM symbols (Fig 14, Ref 108). However, Sakoda fails to disclose a transmission power based upon information regarding a communication channel over which at least some of the stream of OFDM symbols are to be transmitted. In the same field of

endeavor, Van Nee discloses a transmission power based upon information regarding such estimating signal quality being feedback by receiver a communication channel over which at least some of the stream of OFDM symbols are to be transmitted (Col. 7, lines 40 to col. 8, lines 18 and col. 9, lines 63 to col. 10, lines 3).

Since, Sakoda suggests a OFDM system for controlling the transmission power used to transmitting the OFDM signal based on the transmission rate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a method of using the feedback signal quality from a receiver for selecting a transmission power as disclosed by Van Nee into Sakoda's system and method. The motivation would have been to match the energy of the output signal of IFFT with a transmission power in order to minimize co-channel interference.

Regarding claims 57 and 67, Sakoda discloses the spreading codes are orthogonal codes (Fig 14, ref 105 is PN orthogonal codes).

Regarding claims 58 and 68, Sakoda discloses the spreading codes are pseudo-orthogonal codes (Fig 14, ref 105 is PN orthogonal codes).

Regarding claims 59-61 and 69-71, Sakoda discloses adjusting the spreading based on a data rate of the data stream by assigning a plurality of spreading codes to the data stream or one or more spreading codes of shorter length to the data stream (Fig 14, the spread code 4, 2, 1, 1 is selected based on the data rate 32, 64, 96 and 128 kbps).

Regarding claims 62 and 72, Sakoda discloses the spreading is effectively not performed when the data rate of the data stream reaches a particular threshold data rate (Fig 14, when the data rate equal 192 and 256 kbps, then spreading is not effective any more).

8. Claims 56 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda, Van Nee as applied to claims 53 and 63 above, and further in view of Kalofonos (IEEE).

Sakoda and Van Nee fail to fully disclose the claimed invention. In the same field of endeavor, Kalofonos discloses the spreading codes are Walsh codes (Page 1310, left column the Walsh codes).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply the Walsh codes as disclosed by Kalofonos into Van Nee and Sakano's system. The motivation would have been to reduce interference level.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven HD Nguyen whose telephone number is (571) 272-3159. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy D. Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven HD Nguyen
Primary Examiner
Art Unit 2665
8/15/05